Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Establishing the Digital Opportunity Data Collection	)	WC Docket No. 19-195
	)	
	)	
Modernizing the FCC Form 477 Data Program	)	WC Docket No. 11-10
	)	

COMMENTS
of
UNITED STATES CELLULAR CORPORATION

Grant B. Spellmeyer
Vice President
Federal Affairs and Public Policy

UNITED STATES CELLULAR CORPORATION
500 N. Capitol Street, N.W., Suite 210
Washington, D.C. 20001
(202) 290-0233

David A. LaFuria
John Cimko

LUKAS, LAFURIA, GUTIERREZ & SACHS, LLP
8300 Greensboro Drive, Suite 1200
Tysons, Virginia 22102
(703) 584-8678

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SUMMARY

The Commission's adoption of the Digital Opportunity Data Collection deserves credit as a major accomplishment and the fulfillment of a pledge to launch a new broadband mapping effort. This undertaking is aimed at ensuring that the Commission is armed with accurate and reliable data as it takes the steps needed to close remaining gaps in rural broadband coverage, and thus turn the Digital Divide into a digital pathway accessible nationwide to all Americans.

In the Second Further Notice of Proposed Rulemaking, the Commission seeks comment on certain aspects of the DODC, with the objective of enhancing the accuracy and usefulness of broadband deployment reporting. U.S. Cellular welcomes this opportunity to submit these Comment on the Commission's proposals.

U.S. Cellular supports the Commission's proposal to use crowdsourced data to develop more accurate and granular mobile broadband deployment and coverage, agrees that the Commission should explore using aerial drone technology to verify mobile broadband signal strength and coverage data accuracy, and argues that the Commission should launch a pilot program with the United States Postal Service to use USPS's nationwide fleet of delivery vehicles to collect mobile service performance data through drive testing.

U.S. Cellular also supports certain modifications in the Commission's collection of mobile service subscription data. For example, U.S. Cellular encourages the Commission to combine mobile voice and broadband subscription data filing requirements, to require providers to report whether subscriptions are data only, voice only, or are provided as a bundle, and to require carriers to report Internet of Things and M2M subscriptions.

U.S. Cellular also believes that, on an interim basis, the Commission should continue assigning prepaid and reseller subscribers to census tracts based on their telephone numbers, although U.S. Cellular also supports the Commission's exploring the development and use of more accurate measurement methodologies.

Regarding the relationship between Form 477 and DODC broadband coverage data, U.S. Cellular questions the reliability and accuracy of Form 477 data, noting that its use in awarding universal service support is problematic because it overstates existing coverage, thus robbing unserved rural areas of funding. Because of Form 477's checkered history, U.S. Cellular encourages the Commission to implement DODC collections as rapidly as possible and to cease relying on Form 477 broadband coverage data. U.S. Cellular also argues that the Commission should not export to the DODC data collection the standardized technical coverage parameters it used for the MF-II challenge process.

Finally, U.S. Cellular suggests that the Commission should make certain modifications to its proposed infrastructure information requirements to reduce potential burdens on service providers, and that the Commission should not require the filing of broadband coverage maps as raster-formatted GIS data.

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United States Cellular Corporation ("U.S. Cellular"), by counsel, hereby submits these Comments, in response to the Second Further Notice of Proposed Rulemaking adopted by the Commission in the above-captioned dockets.[1]

I. INTRODUCTION.

U.S. Cellular is the fifth largest wireless carrier in the United States, providing mobile wireless voice and broadband services across 21 states, located in regional clusters across the country. Much of U.S. Cellular's business involves finding ways to build towers and provide service in small towns and on rural roads, areas where population density, income levels, and com-

[1] *Establishing the Digital Opportunity Data Collection*, *et al*., WC Docket No. 19-195, *et al*., Report and Order and Second Further Notice of Proposed Rulemaking, FCC 19-79 (rel. Aug. 6, 2019) ("*Report and Order*" or "*Second Notice*"). Comments in this proceeding are due not later that September 23, 2019. FCC, *Establishing the Digital Opportunity Data Collection and Modernizing the FCC Form 477 Data Program*, 84 Fed. Reg. 43764 (Aug. 22, 2019).

mercial development are often well below those in the nation's urban areas. U.S. Cellular is constantly exploring ways to address the economics of providing vital services to areas that present financial challenges to build, maintain, and upgrade voice and broadband services.

In order to accelerate its investments in rural areas, U.S. Cellular participated in the Commission's Mobility Fund Phase I auction process. U.S. Cellular and its subsidiary companies succeeded in winning approximately $40 million in support, which they have leveraged with their own funds to build new towers and upgrade 4G LTE networks serving places U.S. Cellular could never make a business case to construct on its own. Today, consumers in these areas have access to 4G LTE mobile broadband that they would not have, but for the Commission's universal service funding mechanisms. For these consumers, the Commission's program is a huge success.

Recently, U.S. Cellular has participated actively in the development of the Mobility Fund II ("MF-II") program, in which the Commission pledges to distribute $4.5 billion over a 10-year period for further rural wireless broadband deployment. U.S. Cellular's experience in both the Mobility Fund Phase I and Phase II processes has shaped its views on how the Universal Service Fund ("USF") mechanism can and must be improved.

U.S. Cellular agrees with Chairman Pai that, "as the number of Americans without access to broadband service continues to fall, filling in the 'gaps' in broadband coverage—those areas where some but not all homes and businesses have access to broadband service—becomes that much more pressing[,]"[2] and commends the Commission for its initiative in launching the Digital Opportunity Data Collection ("DODC") mechanism as an effective means of identifying those gaps. U.S. Cellular agrees with Commissioner Starks that the Commission has taken "a step in the

[2] *Report and Order* and *Second Notice*, Statement of Chairman Ajit Pai.

right direction" and "appears to [have] set up a promising framework for a Digital Opportunity Data Collection …."[3]

U.S. Cellular has consistently advocated that scarce public funds must be accurately targeted to the areas most in need of support to facilitate the deployment and operation of mobile broadband networks. To accomplish this, the mobile wireless industry needs reliable broadband maps, which makes this rulemaking proceeding vitally important.

The *Further Notice* seeks comment on various actions the Commission may take to improve the accuracy, reliability, and transparency of mobile broadband coverage, signal strength, and other data. U.S. Cellular expresses its support for several of the Commission's proposals in the following sections.

Given the improvements in data accuracy and reliability that the Commission will reap from its DODC mechanism, U.S. Cellular also argues that the Commission should stop collecting FCC Form 477 ("Form 477") data as soon as possible. A compelling reason to take this step is that there is widespread agreement that deficiencies in Form 477 data produce inaccurate assessments of the extent to which rural areas throughout the nation are, or are not, served by advanced broadband networks.

This unreliable Form 477 data has real and detrimental consequences for consumers who live, work, or travel in rural areas. Now that the Commission is on a path to rectify this problem through the implementation of its DODC mechanism, it needs to travel down this path as quickly as possible so that the effectiveness of future USF funding for broadband deployment does not continue to be jeopardized by inaccurate and unreliable coverage data.

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[3] *Id*., Statement of Commissioner Geoffrey Starks.

II. DISCUSSION.

A. The Commission Should Collect Crowdsourced Data Related to Mobile Broadband Deployment.

The Commission has adopted a public feedback mechanism for fixed service providers in the DODC mechanism, and seeks comment on collecting similar crowdsourced data relating to mobile broadband deployment.[4]

U.S. Cellular supports this proposal. Crowdsourced data is one means by which the Commission can develop more granular and accurate data related to the extent of mobile broadband deployment and coverage. Such data is important because it can be utilized by the Commission in analyzing mobile broadband coverage, in identifying outliers that merit further investigation, and in developing policies to further promote mobile broadband deployment in areas lacking sufficient coverage. As the Commission explains, "[c]rowdsourced data can serve as an inexpensive tool to validate speed and coverage claims by providing independent measurements of actual consumer experience on a mobile network across a variety of times and locations."[5]

B. The Commission Should Initiate Pilot Programs to Explore Drone Testing and the Collection of Drive Test Data.

The Commission asks for comment on the prospect of using aerial drone technology to verify mobile broadband signal strength and coverage data accuracy, "with a particular emphasis on using such technologies to conduct sample audits of provider-submitted mobile deployment data."[6] U.S. Cellular supports such an undertaking.

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[4] *Second Notice* at para. 123.

[5] *Id*.

[6] *Id*. at para. 127.

As a general matter, the Commission is wise to explore any data collection options that offer the potential of enhancing its ability to measure accurately and comprehensively the signal strength and coverage of mobile broadband networks. As discussed above, crowdsourced data is one option that U.S. Cellular believes the Commission should utilize as a means of strengthening its data measurement and verification capabilities. The use of drones, and the use of nationwide delivery fleets for drive testing, are other such options.

As the Commission notes, service providers have begun using drones to measure coverage and signal strength of their networks, "demonstrating that drones are a viable mobile network performance testing method."[7] The Commission should seek to take advantage of this capability. One way to do so would be to initiate a pilot program that could test the accuracy and reliability of signal strength and coverage data collected by drones, and also could assist the Commission in assessing cost elements related to drone testing.

The Commission also seeks comment on whether it should create a pilot program with the United States Postal Service ("USPS"), or another delivery organization with a nationwide fleet, to gather mobile performance data through drive testing.[8] If the Commission decides to adopt a drive testing process, the use of nationwide fleets could be an effective means of ensuring that the process produces a useful dataset.

As the Commission notes, USPS "postal trucks could be equipped to collect mobile deployment and speed data as they travel on their routes in rural areas."[9] In U.S. Cellular's view, launching a pilot program to test the feasibility of this approach is advisable, because it may

[7] *Id*.

[8] *Id*. at para. 126.

[9] *Id*.

demonstrate that utilization of the USPS's fleet is a cost-effective and reliable means of gathering accurate data concerning mobile broadband deployment across rural America.

C. U.S. Cellular Supports Certain Changes to the Collection of Mobile Voice and Broadband Subscription Data.

The Commission seeks comment on whether it should combine the mobile voice and broadband subscription data filing requirements, and whether it should require providers to report whether subscriptions are data only, voice only, or provided as a bundle.[10] In addition, the Commission asks whether it should require carriers to report Internet of Things and M2M subscriptions, and it proposes to have carriers break out their subscription data by the following categories: enterprise, government, wholesale, prepaid retail, or postpaid retail.[11]

U.S. Cellular supports these proposals because each of these actions discussed in the *Further Notice* would enhance the transparency and quality of mobile broadband data, as well as providing the Commission with additional tools to analyze the mobile services marketplace and evaluate the level of competition in the marketplace, and also giving the Commission "a better understanding of whether and how consumers purchase and use mobile services …."[12]

In U.S. Cellular's view, mobile broadband consumers, especially those living, working, or traveling in rural areas, will benefit from the Commission's gaining a more detailed understanding of consumers' opportunity to purchase and use mobile services, and from the Commission's enhanced ability to make determinations about competition in the mobile broadband marketplace.

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[10] *Id*. at para. 132.

[11] *Id*. at para. 133.

[12] *Id*. at para. 132.

D. The Commission Should Continue Assigning Prepaid and Reseller Subscribers to Census Tracts Based on Their Telephone Numbers While It Explores Other Measurement Methodologies That May Be More Accurate.

The Commission seeks comment on "how best to assign prepaid and reseller subscribers to a particular census tract[,]"[13] noting that utilization of the place-of-primary-use address methodology is challenging in the case of prepaid customer and reseller data.[14] The Commission also notes that, in the *Report and Order*, it takes the interim step of requiring mobile providers to assign prepaid and resold mobile voice and broadband subscribers to a census tract based on their telephone number.[15]

U.S. Cellular supports the interim action taken by the Commission, since subscriber allocations based on telephone numbers are a feasible approach and will likely produce more granular data than state-level reporting. U.S. Cellular also endorses the efforts of CTIA to identify other options for assigning prepaid and reseller customers to census tracts. U.S. Cellular suggests, however, that any such options should be evaluated in terms of whether they would be too burdensome to be practicable, whether they would in fact provide the Commission with data that is more granular and accurate than the data produced by the Commission's interim approach, and whether they may be inconsistent with, or conflict with, state tax law.

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[13] *Id*. at para. 134.

[14] *Id*. (citing Letter from Matthew Gerst, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 19-195 (July 24, 2019), at 2).

[15] *Id*.

E. The Commission Should Act Expeditiously to Cease Collecting Form 477 Broadband Data and to Use Data Produced by the Digital Opportunity Data Collection in Connection with Universal Service Programs.

The Commission seeks comment on whether DODC maps and datasets should be used "in connection with the other universal service programs … to the extent they provide support for infrastructure build-out, to promote efficiency, minimize waste, and help avoid duplicative funding within the Fund[,]"[16] and whether broadband deployment data collection that is part of Form 477 should be discontinued "at some point after the new [DODC] collection has been established."[17] U.S. Cellular supports the Commission's taking both of these steps.

1. The Inaccuracies and Unreliability of Form 477 Data Have Plagued the Universal Service Program and Distorted the Commission's Assessment of Broadband Deployment.

As the Commission concedes, "it has become increasingly clear that the fixed and mobile broadband deployment data collected on the Form 477 are not sufficient to understanding where universal service support should be targeted and supporting the imperative of our broadband-deployment policy goals."[18] This acknowledgment of the insufficiencies of Form 477 data is supported by numerous criticisms of Form 477 by various stakeholders over a period of years.

A principal insufficiency of the Form 477 data collection mechanism is that it has provided only very broad standards for reporting signal coverage, while failing to provide consistent reporting standards. U.S. Cellular has explained that, because of this, "[t]he service availability data submitted on FCC Form 477 can vary significantly from the actual coverage that rural consumers

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[16] *Second Notice* at para. 84. In addition to the USF high-cost programs, the Commission specifically references the E-Rate and Rural Health Care programs. *Id*.

[17] *Id*. at para. 135.

[18] *Report and Order* at para. 5.

experience on the ground as well as from carrier to carrier, who may report Form 477 using different parameters."[19] This does not necessarily involve carriers misreporting data,[20] but rather reflects "legitimate differences that radiofrequency engineers, equipment vendors, and mapping technicians may have when predicting signal coverage that allow for wide variations."[21]

U.S. Cellular has frequently discussed, "the consistent tendency of Form 477 to overstate [broadband] coverage by incumbent carriers …."[22] As the Commission has noted, NTCA has observed that these "false positives" of broadband coverage can deny support in areas that, in fact, include locations that are unserved, thus "dooming those locations to a lack of service for years to come …."[23] The Commission also agrees that census-block reporting in Form 477 warrants improvement because ***unserved*** areas within served census blocks are counted as served in Form 477 reports.[24] Moreover, in comments recently filed with the Commission, CCA has argued that:

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[19] *Legislating to Connect America: Improving the Nation's Broadband Maps*, Hearing Before the H. Comm. on Energy & Commerce, Subcomm. on Communications & Technology, 116th Cong., 1st Sess. (2019), Written Statement of Grant B. Spellmeyer, Vice President–Federal Affairs and Public Policy, U.S. Cellular, at 1 (unpaginated) ("Spellmeyer Statement"), *accessed at* https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Spellmeyer_Testimony.pdf.

[20] *But see* FCC News Release, *FCC Launches Investigation into Potential Violations of Mobility Fund Phase II Mapping Rules* (Dec. 7, 2018), *cited in Report and Order* at para. 2 n.2 & para. 115 n.286 (announcing the "launch[ing of] an investigation into whether one or more major carriers violated the Mobility Fund Phase II (MF-II) reverse auction's mapping rules and submitted incorrect coverage maps").

[21] Spellmeyer Statement at 1.

[22] Rural Wireless Carriers ("RWC") Petition for Reconsideration and Clarification, WC Docket No. 10-90, *et al*. (filed Apr. 27, 2017) ("RWC Petition"), at 16. (RWC was comprised of U.S. Cellular and five other mobile wireless broadband service providers.) *See*, *e.g*., Ex Parte Letter from David A. LaFuria, Counsel for U.S. Cellular, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 10-90, *et al*. (filed Oct. 27, 2016), at 1 (noting that "[o]verstatement of coverage in Form 477 data is particularly harmful to rural consumers living in areas with poor quality service, because it prevents additional investment with universal service support, perhaps forever.").

[23] Letter from Michael R. Romano, Senior Vice President, NTCA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 10-90, *et al*. (filed Apr. 30, 2019), at 1, *cited in Report and Order* at para. 5 n.5.

[24] *Report and Order* at para. 21 (citing Letter from Steven F. Morris, Vice President and Deputy General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10 (filed May 3, 2019), at 3)).

> The use of flawed Form 477 data has had a markedly negative impact on USF programs. For example, the Commission's most recent mobile data collection to determine areas presumptively eligible for Mobility Fund II support failed to reliably identify which areas are sufficiently served and used parameters that were too general to allow carriers to provide actionable coverage probabilities. If carriers are unable to report useful coverage data, the Commission's efforts to update universal service policies in a cost-effective manner will inevitably rest on a shaky foundation.[25]

In addition, the National Telecommunications and Information Administration ("NTIA") has been critical of broadband coverage overstatements produced by Form 477 data, explaining that a broadband service provider offering service to residential customers or businesses in a census block is "instructed to report that block as served in its Form 477 filing, even though it may not offer broadband services throughout most of the block. This can lead to overstatements in the level of broadband availability, especially in rural areas where Census blocks are large."[26]

U.S. Cellular has explained that awarding universal service funding based on Form 477 data "that masks the fact that 'covered' geographic areas actually are unserved by mobile broadband networks" can produce dire real-life consequences.[27] Specifically, "[g]iven the fact that there is no business case for deploying advanced mobile wireless broadband networks in these rural areas, consumers will be deprived of advanced mobile broadband well into the future."[28] To avoid

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[25] Competitive Carriers Association ("CCA") Comments, WC Docket No. 06-122 (filed July 29, 2019), at 3-4.

[26] NTIA, *Request for Public Comment on Actions to Be Taken to Improve the Quality and Accuracy of Broadband Availability Data, Particularly in Rural Areas*, 83 Fed. Reg. 24747, 24748 (May 30, 2018), *quoted in* National Rural Electric Cooperative Association Comments, WC Docket No. 06-122 (filed July 29, 2019), at 4 n.5.

[27] RWC Petition at 16.

[28] *Id*. at 16-17.

this result, which would undermine the Commission's goal to "target universal service funding to coverage gaps[,]"[29] the Commission should transition away from its use of Form 477 data.

2. The New Digital Opportunity Data Collection Should Replace Form 477.

In order to target USF service funding to eliminate broadband coverage gaps, the Commission must first design and implement sufficient mechanisms to identify those gaps. The DODC, with certain adjustments,[30] promises to serve as an effective means of providing granular data concerning rural areas that continue to lack access to advanced fixed and mobile broadband services.

Because of the deficiencies of Form 477 data, and because of the likelihood that the DODC mechanism will be effective in identifying broadband coverage gaps, the Commission should transition to the new DODC mechanism once it has been successfully rolled out. Once a new DODC is in place, including for example, the use of drones, crowdsourced data, or other enhancements, there simply is no basis for the Commission to continue to rely on Form 477 broadband coverage data in connection with meeting its responsibilities pursuant to Section 706,[31] or making policy decisions and funding disbursements in connection with its USF programs.

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[29] *Connect America Fund*, WC Docket No. 10-90, *Universal Service Reform – Mobility Fund*, WT Docket No. 10-208, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 2152, 2156 (para. 14) (2017), *cited in* RWC Petition at 16 n.43.

[30] U.S. Cellular discusses certain suggested revisions to the DODC mechanisms in Section II.F., *infra*.

[31] Section 706 of the Telecommunications Act of 1996 ("Section 706"), Pub. L. No. 104-104, § 706, 110 Stat. 56, 153 (1996), 47 U.S.C. § 1302), as amended by the Broadband Data Improvement Act, Pub. L. No. 110-385, 122 Stat. 4096 (2008), as codified in Title 47, Chapter 12, of the United States Code. U.S. Cellular has been a long-time critic of the use of Form 477 data for measuring mobile broadband deployment pursuant to Section 706, because the data is likely to overstate mobile broadband coverage in rural areas. *See*, *e.g.*, Ex Parte Letter from David A. LaFuria, Counsel for U.S. Cellular, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10-208, *et al*. (Feb. 25, 2016), Attachment, "Universal Service Reform—Mobility Fund (WT Docket No. 10-208), Connect America Fund (WC Docket No. 10-90), Ex Parte Presentation of

The Commission should focus on implementing the DODC and using it as the basis for Phase I of its Rural Digital Opportunity Fund ("RDOF") mechanism,[32] which will distribute approximately $16 billion in support, for a service period of 10 years, to serve eligible areas based on coverage gaps identified as wholly unserved with broadband at speeds of 25/3 Mbps.[33] Once that disbursement is made, areas determined to be ineligible based on the Form 477 data will likely have no opportunity to obtain any high-cost support for at least 10 years. Accordingly, U.S. Cellular believes that RDOF funds should not be disbursed until areas with coverage gaps have been accurately identified through the use of DODC-generated coverage maps.

Should the Commission go forward with an auction based on Form 477 data, it is possible that a significant portion of the $16 billion could be wasted: It would be disbursed to areas that already have service, but are shown as unserved, while other communities shown as having service in Form 477 would be denied access for at least 10 years if their areas continue to be declared ineligible. U.S. Cellular urges the Commission to avoid this outcome.

United States Cellular Corporation," at 18 (arguing that Form 477 "do[es] not provide the FCC with accurate data that allows reasonable conclusions as to what needs to be done and what it will cost to make services in rural areas reasonably comparable"), *quoted in* U.S. Cellular Comments, GN Docket 16-245 (Sept. 6, 2016) (FCC Section 706 Notice of Inquiry), at 8; *id*. at 9.

[32] *See Rural Digital Opportunity Fund*, *et al*., WC Docket No. 19-126, *et al*., Notice of Proposed Rulemaking, FCC 19-77 (rel. Aug. 2, 2019) ("*RDOF NPRM*"). U.S. Cellular has filed comments in the RDOF proceeding, in which it has argued that the Commission should not use Form 477 mapping data as a basis for distributing RDOF funding. U.S. Cellular Comments, WC Docket No. 19-126, *et al*. (filed Sept. 20, 2019), at 10-11.

[33] *RDOF NPRM* at para. 17.

F. The Technical Coverage Parameters Used in the Mobility Fund Phase II Challenge Process Should Not Be Exported to the Digital Opportunity Data Collection.

The Commission seeks comment on the advisability of applying the technical parameters it standardized for MF-II to DODC data collections.[34] U.S. Cellular does not oppose a requirement for the submission of coverage maps using standardized RF propagation model(s) and parameters,[35] but it has concerns regarding incorporating the parameters adopted for MF-II.

Two years ago, the Commission adopted an MF-II challenge process that would "begin with a new, one-time collection of standardized, up-to-date 4G LTE coverage data from mobile wireless providers."[36] Specifically, the Commission required mobile wireless broadband providers "to file propagation maps and model details with the Commission indicating their current 4G LTE coverage, as defined by download speeds of 5 Mbps at the cell edge with 80 percent probability and a 30 percent cell loading factor."[37] The parameters adopted by the Commission, which it now proposes to apply to DODC data collections, modified a proposal developed by CTIA, reflecting a wireless industry consensus, that called for a 90 percent probability and a 50 percent loading factor.[38]

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[34] *Second Notice* at paras. 116-117.

[35] *See id*. at para. 116.

[36] *Connect America Fund Universal Service Reform – Mobility Fund*, WC Docket No. 10-90, WT Docket No. 10-208, Order on Reconsideration and Second Report and Order, 32 FCC Rcd 6282, 6283 (para. 1) (2017) ("*Challenge Process Order*").

[37] *Id*. at 6298 (para. 34).

[38] *See id*. at 6299 (para. 35). U.S. Cellular notes that recently introduced legislation would instruct the Commission to require that propagation maps use parameters based on a cell edge probability of 90 percent and cell loading of 50 percent. *See* H.R. 4229, 116th Cong., 1st Sess., introduced Sept. 6, 2019 (at Section 3(b)(2)(B)(ii)(I)), *accessed at* https://docs.house.gov/meetings/IF/IF16/20190911/109914/BILLS-1164229ih.pdf.

U.S. Cellular has several problems with exporting the Commission's MF-II mapping requirements to DODC data collections. As a general matter, U.S. Cellular has recently explained that:

> [I]t now seems to be universally accepted that the one-time mapping data [collected in the MF-II challenge process] overstated coverage in rural areas, sometimes significantly. As a result, the areas of controversy were so large that it made the Commission's challenge process very difficult. We believe the primary issue with the one-time data collection is that the standards adopted were not consistent with how carriers design and construct networks.[39]

Specifically, as U.S. Cellular has explained in previous filings, it builds its broadband networks consistent with the standards reflected in the original CTIA proposal. The Commission's revisions to those standards in the *Challenge Process Order* are problematic because they increase relative cell size, in some cases significantly, reducing the size of areas eligible for MF-II support.[40] As U.S. Cellular has noted:

> Many of these areas near the cell edge today require improvements that cannot be made without support. Any move to reduce cell edge probability and cell loading factors will limit rural investments in areas where people live, work and [t]ravel, further reducing the quality of service available to rural consumers over the ten-year life of the fund, relative to urban areas.[41]

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[39] Spellmeyer Statement at 1.

[40] U.S. Cellular has explained that:

> [T]he FCC's one-time [MF-II] data collection used a cell edge probability of 80% and a cell loading factor of 30%.… Experts have indicated that for a rural cell site, using 80% probability extends the cell radius by about 27% and increases the "covered" area by about 60%. This additional 60% could represent hundreds of square kilometers of additional "coverage" per site that is mostly insufficient to support reliable high-speed data and voice service.

Id. at 3.

[41] Ex Parte Letter from David A. LaFuria, Counsel for U.S. Cellular, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 10-90, *et al*. (filed July 26, 2017), at 1.

For the reasons discussed above, if the Commission decides to adopt technical coverage parameters for DODC coverage maps, U.S. Cellular suggests that the Commission incorporate parameters defined by 90 percent probability and a 50 percent cell loading factor.

G. The Commission Should Modify Its Proposed Infrastructure Information Requirements to Reduce Potential Burdens.

U.S. Cellular agrees with the Commission that it should implement mechanisms to improve and verify the accuracy of mobile broadband coverage maps, and U.S. Cellular acknowledges that an important component of this task is for the Commission to obtain "the information necessary to examine the methodologies used by providers in generating coverage data, [and] whether these propagation models reflect actual consumer experience."[42] U.S. Cellular suggests, however, that the Commission should obtain network infrastructure information from mobile broadband service providers in a manner somewhat different from the approach proposed in the *Second Notice*.

The Commission proposes to verify the accuracy of providers' broadband data by engaging in an auditing process. Specifically, a mobile broadband provider, upon receiving a request from the Commission, would be required to submit, within 30 days of receipt of the request, nine discrete categories of network infrastructure information.[43]

U.S. Cellular suggests that, instead of requiring a service provider to submit information in *all* of the categories, in response to a Commission request, the Commission should follow a three-step process. First, a Commission request to a service provider for network infrastructure

[42] *Second Notice* at para. 119.

[43] *Id*. The Commission lists the following information: geographic location of cell sites; height (above ground and sea level), type, and directional orientation of transmit antennas at each cell site; operating radiated transmit power of radio equipment at each cell site; capacity and type of backhaul used at each cell site; deployed spectrum bands and channel bandwidth in megahertz; throughput and associated required signal strength and signal to noise ratio; cell loading factors; deployed technologies; and terrain and land use information used in deriving clutter factors or other losses associated with each cell site. *Id*.

information would be made only upon a determination by the Commission (or by one of the bureaus or offices specified in the *Second Notice*[44]) that there is credible evidence that previous network infrastructure information or coverage maps submitted by the provider are significantly inaccurate.

Second, upon making such a determination, the Commission would request that the service provider submit to the Commission any of the information specified in the nine categories listed by the Commission (and any other information) that the provider believes will sufficiently demonstrate the accuracy of its broadband data and coverage maps.

Third, if the Commission determines that network infrastructure information submitted by the service provider in response to the Commission's initial request was not sufficient to demonstrate the accuracy of the provider's data or maps, the Commission would request a supplemental submission that must include data for each of the nine categories of network infrastructure information.

U.S. Cellular believes that its suggested approach would give the Commission all the information it needs to verify the accuracy of mobile broadband infrastructure data and coverage maps, while at the same time minimizing potential burdens, particularly for small providers.[45] U.S. Cellular also notes that, if the Commission proceeds with the approach it has proposed in the *Second Notice*, then, at a minimum, the Commission should provide carriers with a 60-day deadline for responding to requests for network infrastructure information.

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[44] *See id*. at para. 119 n.294.

[45] *See id*. at para. 120.

H. The Commission Should Not Require the Submission of Coverage Maps as Raster-Formatted GIS Data.

The Commission asks for comment regarding whether it should require the submission of broadband service coverage maps as raster-formatted rather than vector-formatted geographic information system ("GIS") data. The Commission also asks whether it should require, or permit, filers to submit data using another file format, such as ESRI Geodatabase.[46]

In U.S. Cellular's view, service providers should not be required to submit coverage maps as raster-formatted data. In U.S. Cellular's case, the Commission's shifting to such a requirement would impose significant burdens. U.S. Cellular currently relies on vector-formatted data to create its propagation maps, and has therefore developed all of its mapping processes based upon its utilization of this vector-formatted data. Any requirement to abandon this approach and convert to the use of raster-formatted data would force upon U.S. Cellular the burdensome task of reprogramming all of the tools and processes it currently relies upon to produce its coverage maps.

In addition, U.S. Cellular does not believe that the Commission should require service providers to file data using the ESRI Geodatabase file format. Although U.S. Cellular has the capability to generate outputs in various formats, including the ESRI Geodatabase format, U.S. Cellular is not sufficiently familiar with this ESRI product, and therefore would be concerned about the Commission's imposition of any requirement mandating service providers' use of the ESRI Geodatabase format. U.S. Cellular also notes that its preferred file formats are Mapinfo tables or .shp files.

[46] *Id*. at para. 119.

III. CONCLUSION.

U.S. Cellular and many other stakeholders have long been critical of deficiencies in the data the Commission has used in making universal service funding decisions that have a critical impact on consumers and businesses in rural areas. It is very encouraging, therefore, that the Commission has taken important first steps in the *Report and Order* to fix these problems and bring relief to rural areas that have been left on the sidelines for years.

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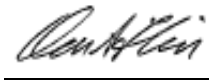
The *Second Notice* reflects the Commission's commitment to continuing this process. In considering U.S. Cellular's Comments, as well as the record of other comments submitted in response to the *Second Notice*, U.S. Cellular urges the Commission to keep its focus on the goal of ensuring that it designs and implements data measurement and reporting requirements and processes that are able to present a clear, accurate, and reliable picture of the gaps in broadband service that still need to be closed.

Respectfully submitted,

UNITED STATES CELLULAR CORPORATION

By: 

David A. LaFuria
John Cimko

LUKAS, LAFURIA, GUTIERREZ & SACHS, LLP
8300 Greensboro Drive, Suite 1200
Tysons, Virginia 22102
(703) 584-8678

Grant B. Spellmeyer
Vice President
Federal Affairs and Public Policy

UNITED STATES CELLULAR CORPORATION
500 N. Capitol Street, N.W., Suite 210
Washington, D.C. 20001
(202) 290-0233

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